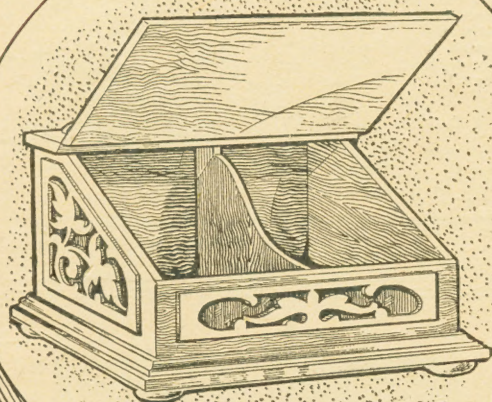
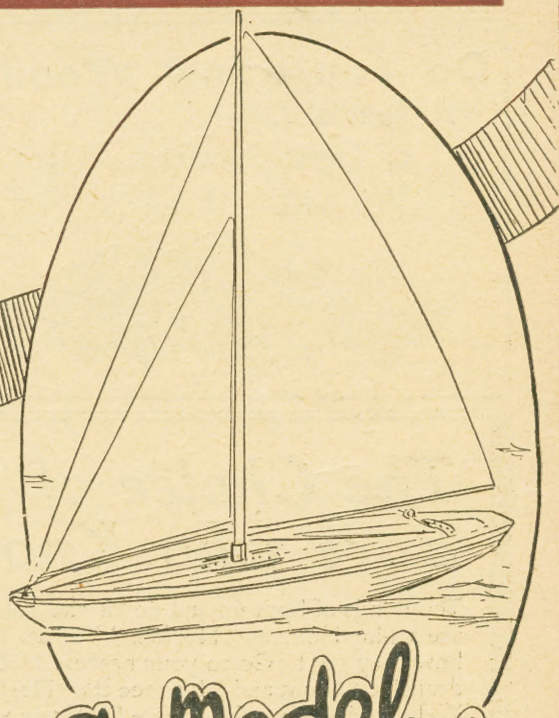


Hobbies

WEEKLY



a Small Box



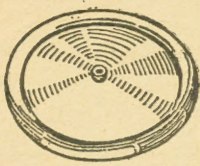
a Model Yacht

July 31st. 1937

2^D

Vol. 84. No. 2180

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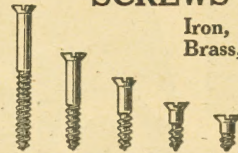
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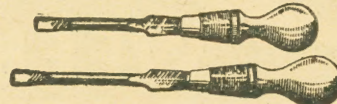
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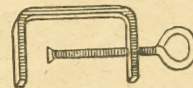
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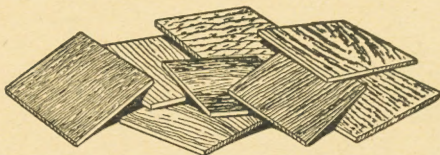


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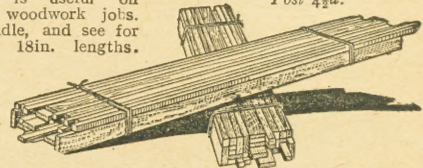
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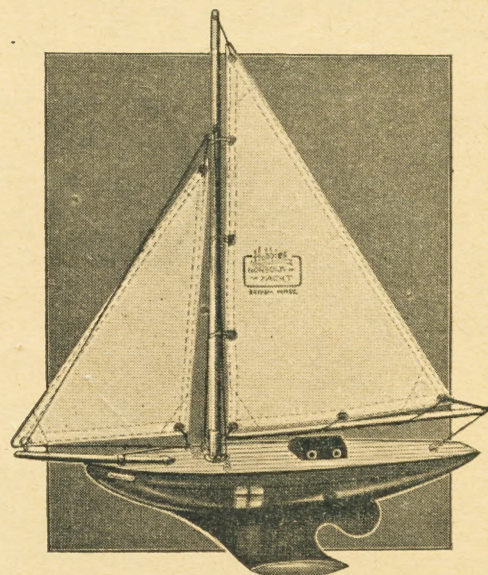
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HOBBIES 'Norfolk' Yachts



Hobbies

WEEKLY



July 31st. 1937

Vol. 84. No. 2180

THIS is the time when the call of the open comes irresistibly to us all, and hiking, cycling or motoring provide energetic and enjoyable recreation. Holidays afford a definite break from the daily round, and serve as a refresher to body and mind. Let us take them comfortably without too much demand on our energy. Let us not make hard work of them by cramming in something for every minute. You can get an enormous amount of strength back, purely by relaxation, on the beach, moor or hillside—resting to your heart's content and cutting out that restless urge to go somewhere else. See that you return from your holiday thoroughly rested and feeling fit to start work again—whether school, factory, farm, shop or office. Then it has really been worth while.

ALARGE number of readers enjoy our articles on model aeroplanes and on model yachts, which appear in this issue. Both are fascinating subjects and they would also find a lot to interest them in two new books on the subject recently published by Percival Marshall & Co., Ltd., of Fisher Street, London, W.C.1. One is "Petrol-Engined Model Aeroplanes" (3/6) and the other "Model Sailing Yachts" (1/6). Both are written in a thoroughly practical way by people who know their subjects and provide illustrations which are really easy to understand. If you are interested you can get further particulars, or the books themselves from the address mentioned above.

THIS is the last week, remember, for the July Photographic Competition, and I want to see a very big entry. Next month there will be more prizes for another subject, and in order to give every reader a chance I am extending the August Competition to have a section for those living overseas.

BE sure to get next week's issue for some specially

interesting articles. In addition to a large gift design chart for making a splendid Vase Stand there will be a quaint little novelty in a Bell Gong—just the thing to sell readily and easily made from odds and ends.

YOU would be amazed at the number of delightful things which adorn my desk and office, and which have been so kindly sent in by readers in different parts of the world. It speaks volumes for the friendly spirit between us when so many take the trouble to make up little novelties and even large pieces of work and then send them to me with their best wishes. I have now quite a large collection of these pieces of work which shows how keen readers are and also how kind they are.

THE most recent piece of work I have received comes from Sawson & Co., of Bombay, who ask my acceptance of a really marvellous piece of paper cut tracery. It consists of a sheet just over 18ins. square, the centre of which has a painted picture of King George V. about 8ins. by 6ins. And all round this picture is the most amazingly intricate tracery cut in the paper—much like the paper doyley used on pastry dishes, cake stands, etc. There must be thousands of little frets, going to make up a wonderful whole. There are peacocks with flowing tails, lions with massive manes, and a complete repeat-pattern framework. I wish you could see it, but unfortunately we would

not be able to print it properly here. One of the amazing things about it is that all the cuts were made with the sharpened point of an umbrella rib. It is, as the sender remarks, "a splendid specimen of Indian patience in artcraft."

A SPECIAL article on Coronation Stamps next week will make interesting reading not only for collectors, but for everyone.

The Editor

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Next Week's Design—Vase Pedestal

Correspondence should be addressed to: The Editor, Hobbies Weekly, Dereham, Norfolk, and a stamp enclosed with the Reply Coupon from Cover iii if a reply is required. Particulars of Subscription rates, Publishing, Advertising, etc. are on cover iii.

Send your own simple tips to The Editor, Hobbies Weekly, Dereham, Norfolk. Keep them short and add rough pencil sketches if possible.

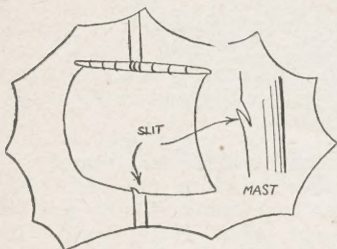
HINTS AND TIPS



For original Tips published the sender will receive a Hobbies Propelling Pencil and Refills. We cannot acknowledge or print all tips sent in.

Model Boat Paper Sails

SOMETIMES it is with the greatest difficulty to get a curved surface to a stiff paper sail in building model boats. The



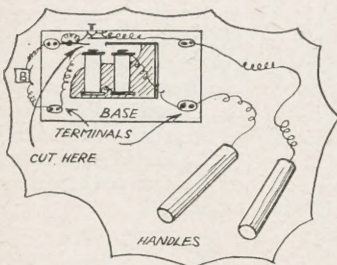
drawback can be overcome by a small cut, about a sixteenth of an inch long, being made in the mast. The bottom of the sail can then be inserted into the cut and will fit tight.—(E.K.)

Canvas for Boats

FLOUR bags well boiled to take out the designs, make very good material for a small sail for a boat or a canoe. The deck-canvas for a canoe could also be of this cloth, which is light, strong and cheap. The bags should be ripped and boiled and then sewn by a machine using fairly strong thread.—(C.A.C.)

Shocker from Electric Bell

FIRST cut the hammer off the armature. Then lead one wire from the contact breaker to one terminal and one from the



base of the bell to the other. Cut two pieces of brass 2ins. to 3ins. long for handles. And the shocker is complete. The sketch illustrates the connections as mentioned.—(J.W.)

Cutting Balsa Wood

WHEN cutting balsa wood it sometimes splits. This can be avoided by taking a pin and dotting the outline of pattern. Slide a razor blade along dotted outline. You will find this a simple remedy.—(A.N.)

A Paint Tip

AFTER using paint put the lid on tightly and keep the tin turned upside-down. In this way the skin which forms is at the bottom when the paint is used again.—(C.E.)

Cleaning Paint Brushes

WHEN you want to clean your brushes, soak them in a drop of metal polish. Then sure enough this method will remove the paint on your brushes.—(W.B.)

Stains for Furniture

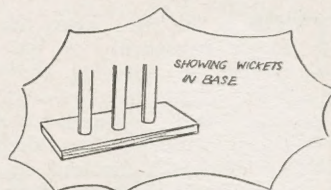
SLIGHTLY dampen a cloth with methylated spirits, and have a second one ready with furniture polish on it. Put a little salt on the stain and rub the first cloth briskly over it. Polish immediately with the second one. Great care must be taken in applying the methylated spirit, as too much or too strong a spirit will damage the polished surface.—(G. Smale).

Improved Rack

WITH reference to the one-piece pen rack in the May 15th issue, I find it advisable to cut only $\frac{1}{2}$ in. from the edge of the board at the pivot pins for the brackets, then to remove the saw, drill the pin holes, and continue sawing. At the hinged support, cut the top line and each side of it $\frac{1}{2}$ in. down. Cut the top line twice—once at right angles to the surface of the wood, and once at a slight slant. This ensures that the holes coincide.—(J. S. M.)

Cricket Tip

WHEN playing cricket on stone ground it is impossible to knock the wickets into the ground. A good tip is to get a piece of wood



10ins. long and 4ins. wide and 2ins. thick and drill three holes wide enough to let the points of the wickets fix securely in.—(M.W.)

Chair Seats

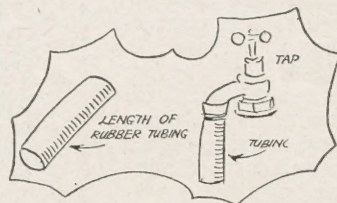
UPHOLSTERED chairs have a nasty habit of "sinking," even when the webbing has been renewed by the handyman. I have overcome this by cutting plywood to shape and tacking into position on the bottom of the chair over the hessian covering. This takes the person's weight and makes the springs last longer—well worth doing, especially as the job takes only an $\frac{1}{2}$ hour or so.—(R.E.)

Stamp Tip

HERE is a hint to stamp-collectors for improving creased and dirty stamps. Place a piece of damp blotting paper on the stamp and press with a hot iron. When the blotting paper is removed, the stamp will be clean and flat.—(L.J.)

Prevent Splashing

FIRST obtain an old cycle tube, and cut to the length you require. Then tie one end



to the pipe with some string. When you switch on the pipe it will not splash out.—(W.Y.N.)



FRETWORK

THE box illustrated herewith is just the sort of little handy container which anyone can make with the fretsaw from odd pieces of wood, and which is most acceptable to any lady for a place on her dressing table for trinkets, jewellery, etc. On the other hand, it is worth a place in the bureau or on a desk where such odds and ends as nibs, stamps, rubber, paper fasteners, etc. can be kept neatly.

Patterns for the parts required are shown full size in the centre pages of this issue, and a parcel of wood is supplied by Hobbies as shown in the panel herewith. This parcel contains sufficient mahogany in planed boards of the correct thickness for all the parts, with additional whitewood for the overlays. The idea of having whitewood is to set off the fretted panel parts against the darker background of mahogany.

The various dotted lines on the pattern show exactly where the adjoining pieces come, and should make the construction quite simple.

Marking Out Parts

There is really no need to paste down the paper parts which are in outline. Just lay the paper over the piece of wood, then prick through at the corners with an awl or strong pin. Take the paper away and join the points up with a pencil mark, and you have the necessary outline. So far as the fretted parts are concerned, these paper patterns must be pasted down to the wood.

The principal parts of the box are cut from 3/16in. wood, but the overlays excepting the top rail are 1/16in. This thin material—the 1/16in. stuff—should be nailed or pinned with short fret-nails to a thicker board before it is cut. If you try and cut it alone you will find the thin stuff is very brittle.

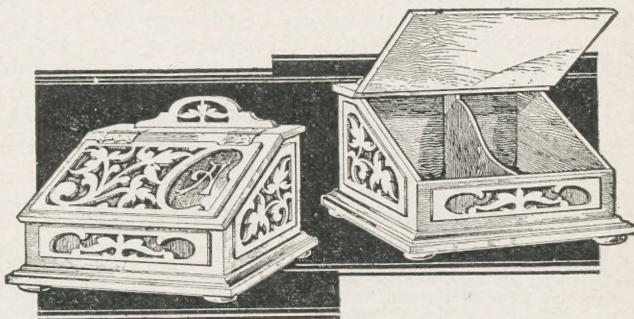
Cutting Together

On the other hand, where you are cutting two

as in the case of the ends, you can get them out together, and so have a thicker piece to work with, and at the same time save the trouble of cutting separate parts.

Notice that after the lid has been cut, a further sawcut is made 3/4in. inwards from one edge. Cut this line quite straight, then chamfer the two edges on the underside to an angle which will allow the lid to fall flat when the two parts are hinged. You see, the larger portion of this piece has to drop below the level of the narrow portion, and

A PRESENTATION TRINKET BOX

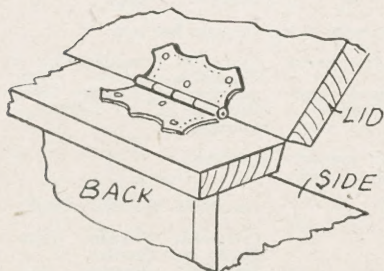


this is not possible unless you plane off a strip.

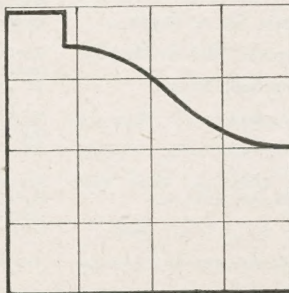
Notice the sectional drawing shown, put the two parts in a vice and plane down an even surface. Thus, when the sloping lid is placed on it fits up to the narrower rail which is glued flat. The two parts can then be hinged together with the ornamental metal hinges supplied (No. 5308).

As far as the construction is concerned, all the main parts of the casket can be got out first, cut carefully and cleaned up with a rubbing of glasspaper. Then get the front, back and two ends, and glue them upright upon the base, or floor. Notice that the two ends go behind the front, but the back goes between the two ends.

All these upright pieces, by the way, are set inwards about 3/4in. from the edge of the actual floor. This allows room for the four pieces



A detail showing how the lid is hinged to the back strip



The centre partition shape, drawn out half scale

MATERIALS

For making this Casket, we supply a parcel of mahogany and white wood for overlay, including sufficient moulding (No. 307) and four toes (No. 19) for 1/5 or post free 1/10. A pair of fancy hinges (No. 5308, 3/4in.) 1 1/2d. post free 3d. A complete parcel for 1/11 post free

of moulding (No. 307) which decorate the angle of the floor and sides. Test out the position of all these parts temporarily, then get out the overlays, clean them up and glue them to the ends and to the front so that the parts are complete before the whole framework of the box is glued to the floor.

Back, front and ends can be stiffened in place if you like by driving a screw upwards through the floor but they should be quite strong enough even without these by the time the moulding is fitted in. Cut the latter at an angle of 45 degrees at each end, testing out the actual length required by the box so far built.

The lid which is the two-piece part we have previously mentioned also contains an overlay cut from 1/16in. wood, while a pediment or top rail forms an upright piece glued to the back strip of the lid in the position shown by the dotted lines.

Do not put this upright rail on until you have fixed the hinges, then glue slightly inwards from the back edge and centrally between the two ends.

The Central Partition

Another point you have to decide before fixing the lid is whether you are having a centre upright partition which can be seen in the picture of the finished article. This partition is not shown full size among the patterns, but for those who want it we have shown herewith a detailed drawing of the shape.

A piece of wood 3ins. square is required, and on it are drawn smaller squares 1/2in. across. Having lightly pencilled these on the wood, trace out the shape shown at the top, then cut out in the usual way with the fretsaw. This piece should be in 1/2in. wood and is glued half way along the floor between the ends. Be sure to get it upright and make it as tight a fit as possible in order to provide a firm partition.

Little nails can be driven through from the underside and from the back, further to strengthen if necessary. The wood for this partition, by the way, is not provided for in the parcel, but can be easily cut from any odd piece you have.

Monogram Letter Supplied

The overlay has in it an open panel, and this is for a monogram or initial letter to be added. If you wish we shall be pleased to supply a tracing of a suitable letter for this, so you can paste it to wood, ivory, xylonite or some other composition to form a suitable finish, or, of course, you can easily cut out a letter from some printed leaflet or display bill, and use this as a pattern for the wooden monogram.

The whole box is lifted slightly by means of four little toes (No. 19) which are glued slightly inwards from the four corners of the floor. If these toes refuse to be glued on because of their smooth surface, you can easily scratch the wood with chisel or knife to overcome the trouble.

HOBBIES LEAGUE CORRESPONDENCE CLUB

These Members of Hobbies League would like to get in touch with other readers and so form pen friendships which will undoubtedly prove interesting to all. In this way, one has a wide circle of friends and increased knowledge in people and places, not only in one's own country, but all over the world. Members should write direct to the addresses given, stating their full address and age, adding any hobbies in which they are interested. Hundreds of members have already taken advantage of this Correspondence Club in this way and others who wish to do so should notify the Registrar with the necessary particulars.

NAME	ADDRESS	WANTS FRIENDS	INTERESTS, Etc.
A. F. May.	5, Sunningdale Avenue, East Acton, W.3.	Ireland or S. Africa.	Electricity and collecting Foreign Coins.
K. Thompson.	Alderton, Woodbridge, Suffolk.	Gibraltar or Malta.	Snaps, Stamps, etc.
Yee Meng Whye.	Anglo-Chinese School, Malacca, S.S.	Anywhere.	Anything.
C. A. Fook.	681, Dato Kramat, Penang, S.S.	British Empire.	Coronation Stamps.
J. M. Mistry.	91, Jeewan St., Ramswami Quarter, Karachi, India.	America, Australia, Japan and Scotland. (Specially Girls).	Stamp collecting & Fretwork.
H. Schmekel.	Holtener Street 274, Kiel, Germany.	England. Preferably a Girl. (16-20).	Anything.
D. J. Griffiths.	3, New Street, Godrergrai, S. Wales, Swansea.	British Empire. Australia, India, Africa, or Canada.	Photography, Stamps and Electricity.
L. Turner.	131, Durban St., Uitenhage, S. Africa.	England & America.	Commercial Art.
J. J. Bryden.	275, Broadview Ave., Toronto 8, Ontario, Canada.	Anywhere outside Canada.	Exchanging Stamps, Newspapers, Illustrated Mags.
L. Meunier.	52, St. Casimir, St. Hyacinth, Quebec, Canada.	Anywhere except Gt. Britain.	Aeroplanes, Scouts, Boats and Fretwork.
Y. Rayner.	41, Nelson St., Ryde, Isle of Wight.	Overseas.	Stamp collecting.
W. D. Davison.	4, Saturn St., Deneside, Seaham Harbour, Co. Durham.	Germany America or India.	Foreign Stamps.
R. K. Jefferies.	1, Victoria Rd., Southall, Middx.	All over the world.	Fretwork, Photography, & Gardening.
J. A. Wong.	P.O. Box No. 135, Kuala Lumpur, Selangor, British Malaya.	Newfoundland and the Mediterranean.	All Hobbies, Postage Stamp exchanging.
C. Cocks.	140, Westfield Rd., Hull, Yorks.	Anywhere.	Stamps.
Md. Ibrahim.	295, Haji Wahab's Kampong, Jalan Raya West, Klang, F.M.S. Br. Malaya.	Anywhere, particularly France and Germany.	Stamps.
L. B. Bushell.	120, Morningside Rd., West Derby, Liverpool, 11.	Anywhere.	Fretwork, Sports & Cycling.
B. S. Khoo.	1728-4, Peel Rd., Kuala Lumpur, Selangor, F.M.S.	Anywhere.	Fretwork, Stamps, Snaps, Books and Sports.
S. A. Gabbott.	21, Nursery Rd., Gardens, Norwood, Johannesburg, S. Africa.	Anywhere.	Fretwork, Stamps, Photography, Wireless.



SOME MORE HINTS ON COMPOSITION

IN the last chapter reference was made to horizons and the avoidance of water running uphill also the necessity of holding the camera absolutely square. It is for this reason that with many cameras a small spirit level is provided. If you have not such an instrument on your camera then you will find difficulty in getting some of your work correct, especially architectural subjects or where you have parallel lines such as buildings, both interiors and exteriors.

We all know that in nature straight lines are hard to find, but the fact remains that there are such things as straight lines that have been produced by the effort and work of man and sometimes these find their way into our snapshots and it is important that they are represented in correct style.

Straightness to Avoid

In taking a seascape with horizon complete, care must be used to avoid that straight line of nature cutting across the actual centre of the picture. If it is unavoidable when taking the scene then you must trim the print in such a manner that the line is not in the centre.

Then there is another type of straightness which we must shun. A lane, a woodland path or even a street must not be taken by standing immediately in the centre. If you do this you will get a wide

or left hand corner of the picture and no one can find fault with you for that.

We mentioned woodland paths before and we would like to advise readers to take their cameras into a spot where there are some good specimens of trees. The more kinds there are the better for you. If you have a new spool in the camera, make up your mind to expose the whole eight or dozen on our friends the trees.

Try the Positions

Take them in different positions on the view finder, some well down the path others, fairly close to you. Some may be in groups, or avenues, but see that trees are in each picture somewhere. Now when you have developed and printed these you will find you have had a splendid lesson in composition.

Examine each print for faults and try cutting and trimming. Trees are wonderful examples of that rule which all advanced workers try to follow when making their pictures. This is the use of the triangle in the lines of the view. By this is meant the arranging of the main details of the picture or scene into triangles.

We will try to explain this further so you may be able to put the idea into practice at once.

Picturesque Placing

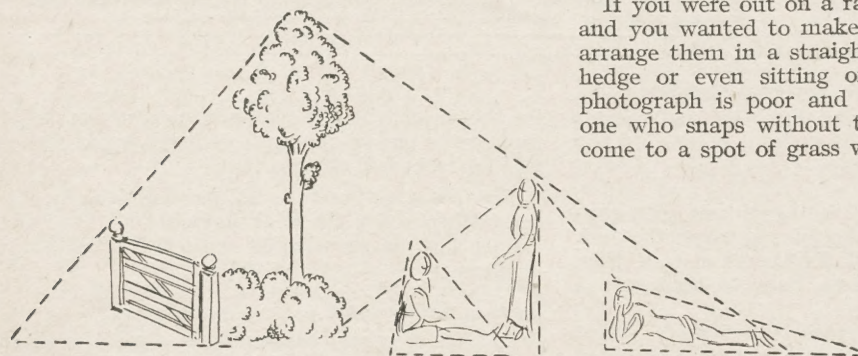
If you were out on a ramble with three friends and you wanted to make a snap of them do not arrange them in a straight line against a gate or hedge or even sitting on a stile, that sort of photograph is poor and indicates a beginner or one who snaps without thinking. Wait till you come to a spot of grass with a good tree on, say

the right hand side of it. Then arrange your friends in this way. The first one can be stretched out on the grass with his head resting on his hand with elbow on the

ground. Number two should be standing up and looking down at the fellow on the ground and the third could be on the other side of the standing one, but sitting on the grass. The tree would be on the side of the picture.

On examination, the result would prove to be a series of triangles made by the legs of number one, also by his bent elbow. The three figures would be a triangle, possibly the tree another and the figures and tree also another, you would thus secure not only a happy snap of your friends but also one that would have pictorial qualities.

Snapshots of friends can be made much more



How to arrange a picture to get correct composition

expanse of road in your foreground giving a very poor perspective and with two lines running to meet each other in the far distance.

In competitions with a class for Street Scenes it is surprising how many of this type are sent in. They are, of course, hopeless, and never receive a second thought by the judges. When you have this subject in your view finder just be sure to step two or three paces to the right or left—anywhere so long as you are out of the centre. By this action you will have the satisfaction of seeing the roadway vanishing out of the bottom right

interesting if the friends are not aware that their photographs are being taken. It is really good fun and at the same time very interesting indeed to make a point or study of stalking friends so you can get them in some sort of characteristic pose.

When on holidays try this and then when you show the folks their photographs, it is really funny to watch their facial expressions and to hear their comments.

A Natural Position

If two friends want their photos taken at a special spot on their hike or picnic there is absolutely no reason why they should be looking full face at the lens of the camera. Make them turn partially towards each other and to be talking about something that will absorb their interest for a few minutes. Watch your opportunity to snap and you can be assured that they will be much more pleased with the result than they

would have been if you had snapped them having their 'portrait' taken on the road to—!

It is just the same with beach parties. They are of greater interest when the photographer has snapped the group unawares and the individuals are engrossed on something altogether outside the question of photography.

Before we can leave this question of composition, there is one other side of it we have to consider, and that is balance.

There is today, a great tendency on the part of amateur photographers to include great masses of white clouds in their prints.

As we said at the beginning of this article on composition it is impossible to teach you all there is to be taught on the subject in a few lines. We can only give hints and advise you to follow certain definite rules, and to read as much about the subject as you can. For the more you know about it, the better your work will be.

JULY PHOTOGRAPHIC COMPETITION

Subject—"Speed"



HERE is a subject which you can see in everyday life everywhere. A train, a motor, running races, or even a dog chasing a cat. Think out some original "snap" and send it along. With these bright, long days you can get a sharp picture with a fast exposure.

PRIZES AND RULES

In the Open Section a 1st Prize of A Guinea Swan Fountain Pen and a 2nd Prize of 10/-.
In the Junior Section (those under 16) the 1st Prize is a Fountain Pen value 10/- and the 2nd Prize 7/6. Each print must bear the competitor's full name and address, and his age, if under 16 years. Entries should be addressed Amateur Photographic Competition, Hobbies

Weekly, Dereham, Norfolk, and must arrive not later than July 30th. The Editor reserves the right to publish any entries he wishes in Hobbies Weekly. No competitor to take more than one prize during the season. If a stamped addressed envelope is sent with the entries every endeavour will be made to return them, except the prize-winning ones.

A Plank Yacht—(Continued from opposite page)

rudder on to the keel and into the lead socket. (Fig. 5).

Painting and Marking

Paint the inside of the hull with one coat good oil paint. Then paint the joint between the deck and hull. Bore the deck for the stern post, then mark on the deck pieces lines to represent a planked decking.

This marking can be done in two ways. First by drawing on waterproof ink lines on a prepared surface to represent the planks. But perhaps the best and more lasting way is done with the scratching gauge. Gauge a line $\frac{1}{2}$ in. in from the outline of the deck. Then fix the deck piece temporarily on a board and gauge a line down the centre add line after line on each side of the centre line $\frac{1}{2}$ in. apart.

Paint the deck joint again ready for screwing in position. For the step, cut a piece of brass $2\frac{1}{2}$ ins. long by $\frac{1}{2}$ in. broad and bore eight $\frac{3}{32}$ in. holes at one $\frac{3}{16}$ in. centres (Fig. 8). Bore a hole for fixing with a screw nail.

The two views shown at Fig. 8 are of the step

for the mast, which is screwed down on the inside hull so the end of the mast, if fitted up as shown at Fig. 10, would fit into it.

Fix the step, bore the hole in the deck for the mast, then screw the deck in position. Add the rudder and fix in position with the strap hinge as shown.

Steering Arrangement

Cut the steering quadrant from a piece of sheet brass as shown at Fig. 6. Bore the hole for the rudder post and the small holes for the hooks from the sheet line. Solder the quadrant and post. The bow fitting for the jib sheet is shown at Fig. 7.

The socket for the mast (Fig. 9) is arranged on a movable principle so that one can move the mast fore or aft to get the best sailing results.

The sail plan is given at Fig. 11, with the lengths of the necessary spars and rig. Finally give the hull and keel of the yacht two coats of white lead paint. Then finish in two colours, the body above and below the waterline in enamel. Varnish the deck and spars.

A SIMPLY-MADE PLANK YACHT

As a rule the building of a model sailing yacht with ribs and planked covering is a difficult job, but with the method shown the work is simple. It is easily carried out and has the advantage that being built of board wood one can depend on getting seasoned timber.

The hull is made of the best seasoned white pine or yellow pine, each board or lift being exactly 1 in. thick, cut accurately to the shape of the designed line in Fig. 2. The termination of each lift gives the correct outline of the boat.

The inside is also cut out roughly with a fretsaw to minimize the gouging required after it is glued up.

The Seven-piece Hull

In building begin by jointing up the seven pieces which are to form the hull of the yacht. Plane each side smooth and straight and to the exact thickness. Mark off the centre line on the breadth of each piece and set out the outlines.

Two pieces similar to I Fig. 2 and one piece to the other patterns are required. Fig. 3 shows the complete shape of the lift at A, Fig. 1.

In gluing up use a waterproof glue and to prevent the various lifts from slipping from their correct position a $\frac{1}{8}$ in. dowel at each end, in the centre line, is useful. The dowel is kept in the waist of the interior and so when the gouging is done they will have been cut away.

When the glue has hardened off, fit a piece of $\frac{3}{4}$ in. wood into the inside of the block. Screw this down to the second or third lift and then screw lengthwise a $1\frac{1}{2}$ in. square fillet to the board.

The block is now turned upside down and fixed in the vice and the outer shaping proceeded with. The walls of the hull are cut out to about a $\frac{1}{4}$ in. thick ($\frac{1}{8}$ in. minimum). Fit a $\frac{1}{2}$ in. thick beam across midship as shown at Fig. 4. Then prepare the deck line.

Shaping

This shaping is called the sheer line and gradually falls from the bow with a slight camber till it cuts the top lift to $\frac{1}{4}$ in. thick at the stern (Fig. 1). This shaping is done with a small plane.

The deck which is $\frac{1}{8}$ in. thick is made to follow the outline of the hull. The edge of the deck can be rounded and made to project past the line of the hull (Fig. 4) or it can be rounded and

kept flush with the hull. This method allows the head to be stopped as it comes near the stern and the end of the deck to be cut to the line of the hull over the counter.

The Keel

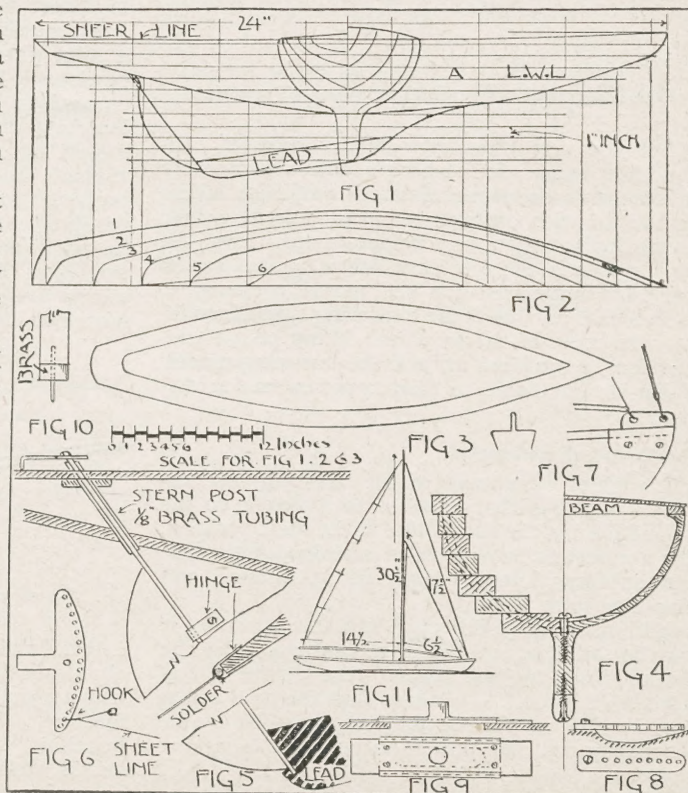
In cutting out the keel from a piece of 1 in. thick mahogany follow the shaping given at Fig. 1. The lead is cast to the pattern (Fig. 1 and Fig. 4). It is prepared with two holes so it can be fixed to the wood of the keel with 3 in. screws.

Shape out the keel by laying it on flat on the bench and hollowing out the sides with a spoke-shave. Make the shaping well drawn out to a knife edge at the bow. The stern end should be about $\frac{1}{4}$ in. thick. Fit the keel on to the hull of the boat, then fix with three $1\frac{1}{2}$ in. screws and washers from the inside.

Bore the hole in the hull for the stern post, fit it in position then add a strip of wood across to hold the stern post at the needed angle.

Proceed to make the rudder, which consists of sheet brass and $\frac{1}{8}$ in. wire post. Solder the wire and sheet brass together. Then fit the

(Continued on opposite page)

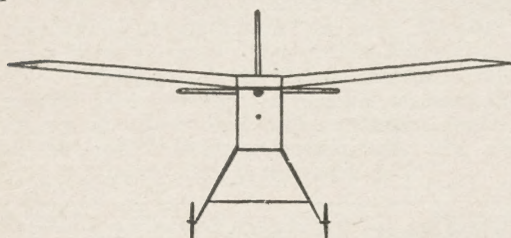


A PLEA FOR LOW WING MODEL

MODEL AIRCRAFT TOPICS

WHERE model aeroplane enthusiasts congregate, there is friendly banter between the exponents of high-wing types and those who favour the low-wing position. Superficial critics might well point to the preponderance of the high-wing type as sufficient evidence of inherent superiority, but one feels convinced that there are other reasons for the numerical ascendancy.

To begin with, the high-wing method is the most obvious. What could be more natural than to build a fuselage with four flat sides, and tie a wing on top with rubber strip? This freedom to slide the wing to and fro in search of longitudinal trim is quite understandably beloved of the novice.



High-wing model, with (large dot) centre of resistance, and (small dot) centre of fuselage

But the very simplicity of this form of construction makes for lightness, and consequently endears it to the more advanced modeller taking part in duration contests where there is no weight restriction or only a very moderate one. Since the 1937 season is the first in which a heavier model has been stipulated for the major contests, it follows that until now the high-wing type of model has won most of the trophies. Many people are, therefore, prejudiced against the low-wing model, which is regrettable, as that type has undoubted virtues.

The Centre of Resistance

The great advantage of the low-wing rubber-driven model is that there is no difficulty in the way of placing the thrust-line in the ideal position. For a model to be capable of sustained flight, the four opposing forces, weight, lift, resistance, and thrust must be balanced.

Without going too deeply into this question, it may be said that it is highly advantageous for the line of thrust to pass through the Centre of Resistance (C. of R.). This is so that the trim of the machine shall be as little affected as possible by the constantly varying power output of the rubber motor.

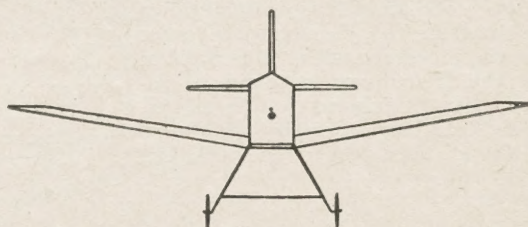
Let us see where the C. of R. comes in high-wing

and low-wing models. Admittedly, without using a wind tunnel or delving into higher mathematics, our procedure will be somewhat of the 'rule-of-thumb' order, but should prove sufficiently helpful to enable any variation of the thrust-line position found desirable after test flights, to be made without reconstruction of the fuselage.

Make a fairly large (or better still, a full-size) front elevation drawing of the model (see illustrations). In the case of the fuselage alone, it will be apparent that the C. of R. will be in the centre. But the resistance of the undercarriage will have the effect of lowering it, while that of the tail-unit will probably restore it to the original position. The C. of R. of the complete machine will, therefore, finally be determined by the position of the wing.

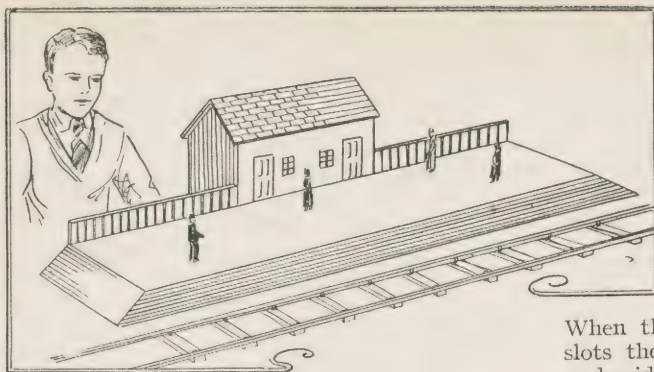
With the wing on top of the fuselage the C. of R. will be in the region of the top longerons, where it is obviously impossible for the rubber motor to function. One can get over the difficulty by using a geared motor and driving the propeller from an idling shaft, but this is beyond the scope of the beginner.

Alternatively, the thrust-line must be lowered to a point where the rubber is clear of the top of the fuselage. This renders the model sensitive to changes in longitudinal trim, due to the rubber bunching at the rear, or to differences in length, weight or power output of different skeins of rubber. The effect can be lessened by tilting the propeller forward from the vertical, but only a relatively small amount of this 'down-thrust' can be employed without the propeller-hook fouling the top of the fuselage. This sensitiveness may not worry the expert overmuch, but may cause the novice to stall and wreck his model.



Low-wing model with (small dot) as fuselage and (large dot) as resistance centres

With the low-wing lay-out the thrust-line can obviously be placed on the centre of resistance, which usually falls slightly below the centre of the fuselage. Thus even bad examples of rubber-bunching usually mean nothing worse than a gentle stall and quick recovery, while fast or upward launching rarely cause trouble.



A NOVEL MECHANICAL STATION

See the tiny people walk along the platform quite realistically in this mysterious model

THIS novel mechanical model is wonderfully realistic because the people can be made to walk along the platform in a mysterious manner merely by turning a handle. The whole model is made in cardboard with the aid of a sharp penknife, steel rule, some gum and a little patience.

To make this model railway station get a piece of thin strong cardboard and cut it as shown in Fig. 1. Then run a penknife lightly along the lines E F, F G, G H and H E. Bend A, A₁ and B downward at right angles to X and bend the end pieces D and C downward till I meets J, K meets L, O meets P and M meets N.

Stick the tags T, U, V and S in their respective positions as indicated with gum or glue and the platform of the station is ready. Get another piece of cardboard and cut it as shown in Fig. 2. The tags F, G, H and I should correspond with the slots Q₂, Q₃, Q₄ and Q₅ in Fig. 1. Run a penknife lightly along the line A B and bend E upward at right angles.

Booking Office

This piece of cardboard represents the station booking office and it should be attached to the platform by pushing the tags F, G, H and I through the slots Q₂, Q₃, Q₄ and Q₅ respectively.

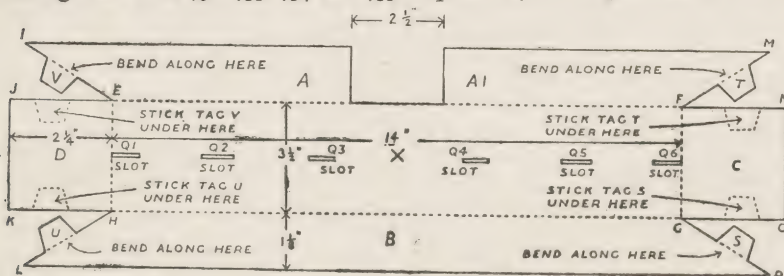


Fig. 1

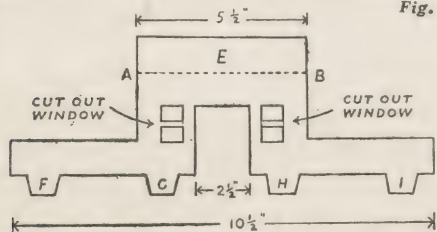


Fig. 2

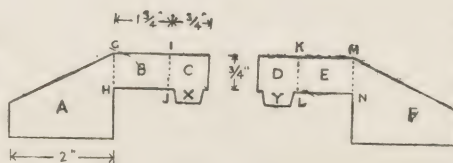


Fig. 3

When the tags have been inserted through the slots they should be bent and gummed to the underside of the platform.

Get two more pieces of cardboard and cut them as shown in Fig. 3. Run a penknife lightly along the lines G H, I J, K L and M N. Bend A upward at right angles to B and bend C downward at right angles to B. Insert the tag X through the slot Q₁ in Fig. 1 and stick A to the back of the platform (see Fig. 4).

Returning to Fig. 3, bend D downward at right angles to E and bend F upward at right angles to E. Insert the tag Y through the slot Q₆ in Fig. 1 and stick F to the back of the platform.

Next get three pieces of wood and cut them as shown in Fig. 5. Fix the two pieces S and T to R with screws as illustrated in Fig. 6 and drill the holes A and B in the positions indicated.

Sprockets and Chain Wanted

Obtain from a toy shop two small sprockets with a length of ladder chain to fit, four bevel gear wheels, two short straight spindles, two handle shaped spindles and two double angle brackets.

Take the two straight spindles and insert one through hole A and the other through hole B. Then fix a sprocket and a bevel gear wheel to each spindle as shown in Fig. 7. With the ladder chain make two belts one to go round S and the other to go round T (see Fig. 8).

As shown the sprocket W must engage the chain that goes round S and the sprocket X must engage the chain that goes round T. A number of small strong bar magnets are required next and these should be fixed to both chains in the way illustrated in Fig. 9.

The double angle brackets should, when bought, be provided with a number of holes for inserting screws, etc.

If they are, attach

to each bracket a handle shaped spindle as shown in Fig. 13 by inserting the spindles through suitable holes. Then fix to each spindle a bevel gear wheel. Fix both brackets to R in such a way that one bevel gear wheel is in mesh with Y and the other is in mesh with Z (compare Figs. 7 and 13) and the handles are in the positions shown in Fig. 8.

When this has been done, take the complete apparatus and mount it on two wooden supports as shown in Fig. 12.

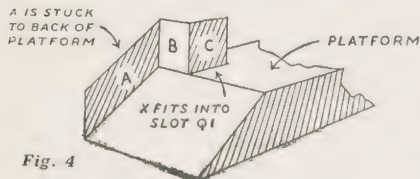


Fig. 4

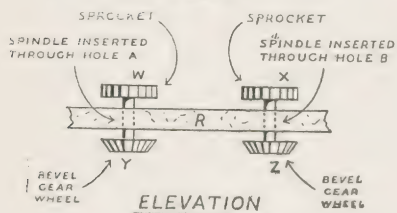


Fig. 7

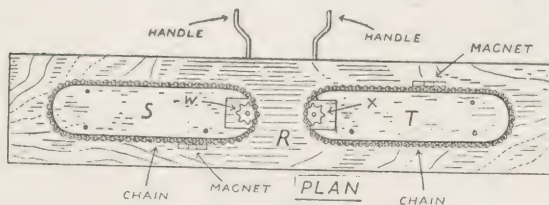


Fig. 8

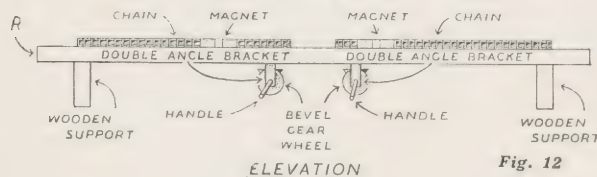


Fig. 12

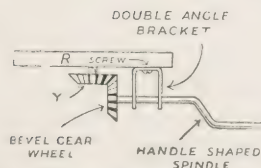


Fig. 13

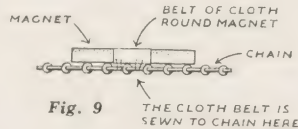


Fig. 9

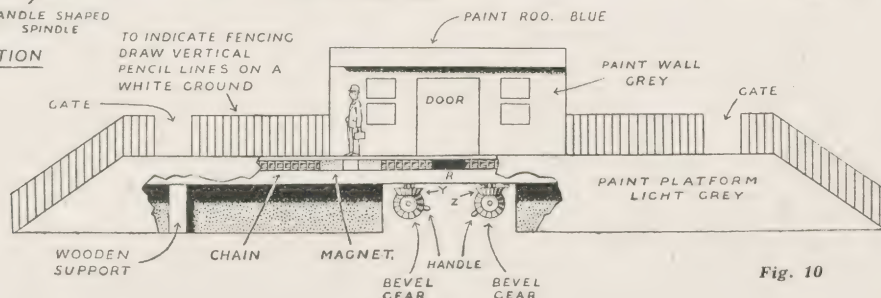


Fig. 10

Then place the hollow platform of the station over the apparatus as you would place a tea cosy over a tea pot and fix it there by driving screws through the side of the platform into R (Fig. 10).

It is important that when in position the magnets should be as close as possible to the platform.

Paint the station in the colours suggested in the sketch. Cut out the figures in Fig. 11, stick B to the back of A and D to the back of C and bend the tags so the figures stand up. Then attach to each tag a small piece of metal.

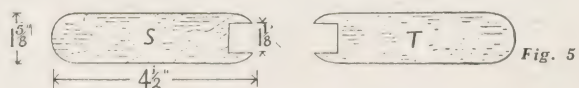
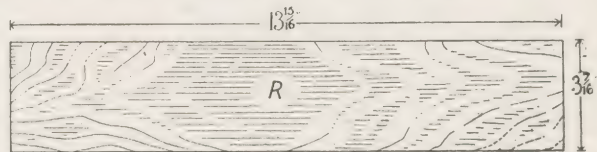


Fig. 5

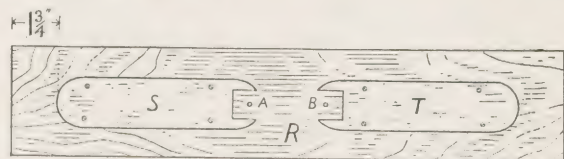


Fig. 6

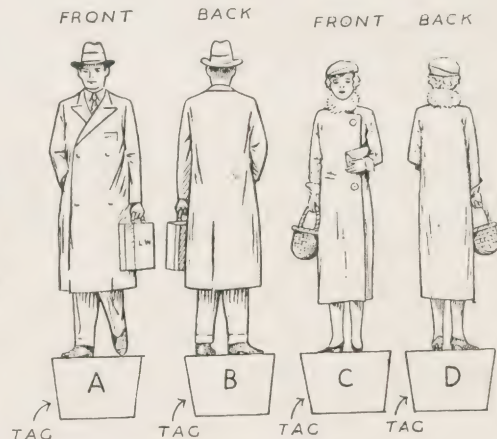


Fig. 11

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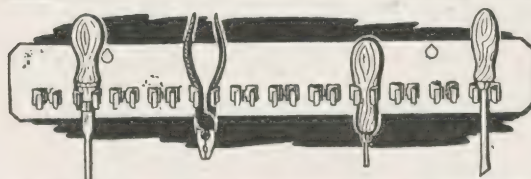
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3ft. LENGTHS					
Size	Each	Doz.	Size	Each	Doz.
3in. X 1/4in.	5d.	4/6	3/4in. X 1/4in.	2 1/2d.	2/3
1/2in. X 1/4in.	1d.	10d.	6in. X 1/4in.	1/5	15/-
2in. X 1/4in.	3 1/2d.	3/-	3/4in. X 3/4in.	3d.	2/6
3in. X 1/4in.	4 1/2d.	4/3	6in. X 3/4in.	1/9	19/-
6in. X 1/4in.	9d.	8/-	1 1/2in. X 3/4in.	3 1/2d.	3/-
3/4in. X 1/2in.	1 1/2d.	1/3	1 1/2in. X 1in.	7d.	6/-
1 1/2in. X 1/2in.	2d.	1/8	6in. X 1in.	2/-	22/-
6in. X 1/2in.	1/-	10/6	3/4in. X 1in.	4 1/2d.	4/-
1 1/2in. X 1in.	2d.	1/8	1in. X 1in.	7 1/2d.	6/9
6in. X 1in.	1/3	13/6	2in. X 1in.	1/2	12/6

NOTE.—There is a minimum charge of 6d. to cover postage and packing. Please include this amount if you order by post.



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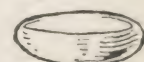
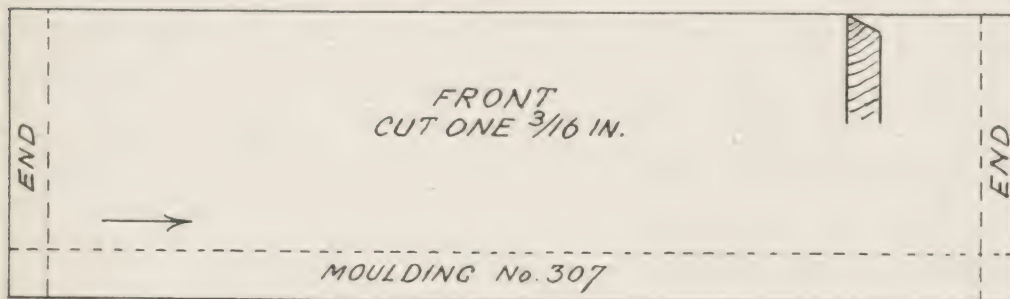
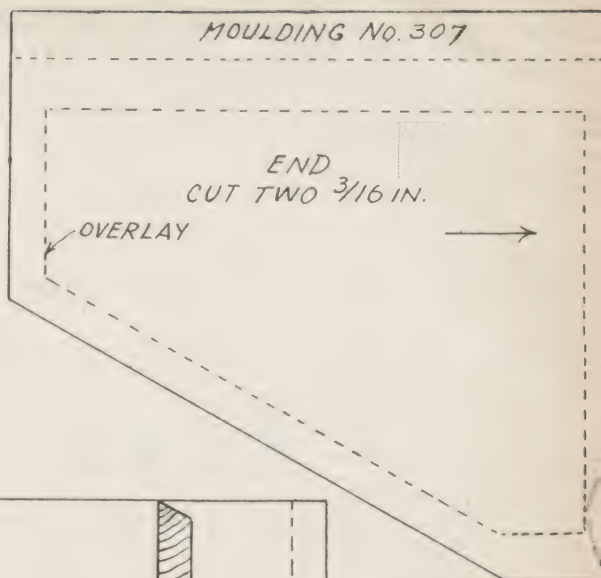
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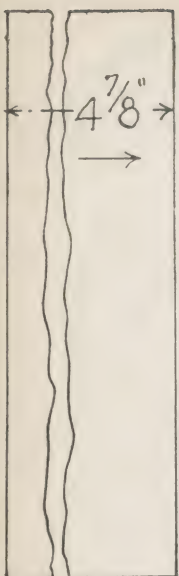
TOES No. 19
 FOUR REQUIRED



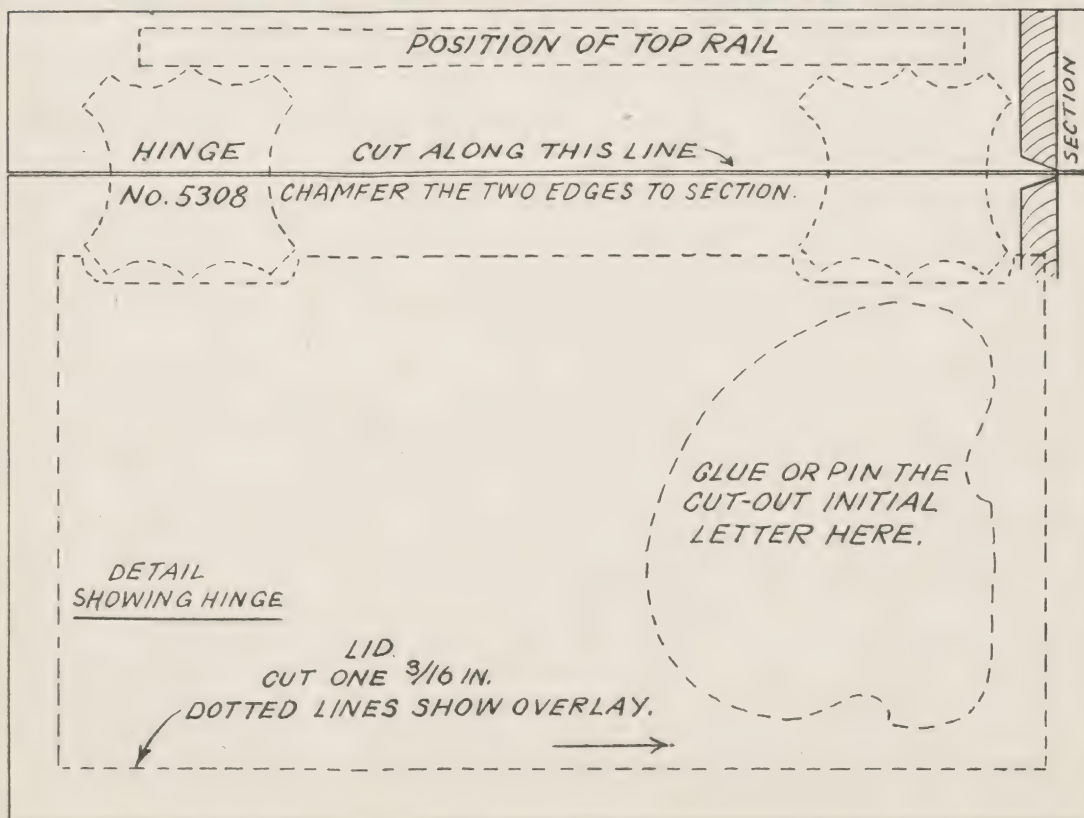
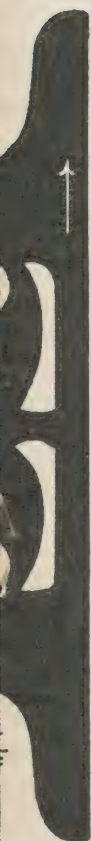
SMALL FRETWORK BOX

Design No. 2180

Full particulars and instructions on page 411



BACK
CUT ONE TO
LENGTH $\frac{3}{16}$ IN.



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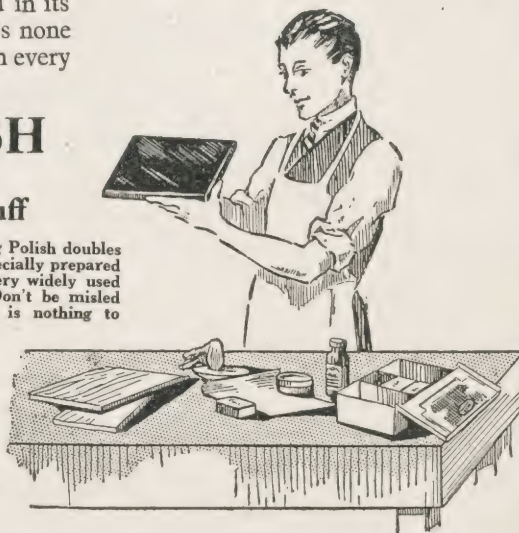
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A DOLL'S CRADLE

HERE is a splendid little cradle of a really useful size. It is one that will take a good size doll and is a picturesque little affair easily made up. The wood suggested is satin walnut if the finish is to be stain and varnish.

The cradle is 18½ ins. long by 14½ ins. high and the shaped sides and canopy make it an interesting piece to cut and put together.

The floor (A) is a plain piece ¾ in. thick, and upon it is glued and screwed the two sides (B), the foot (C) and the head (D), and each piece is put on as Fig. 1 shows. The shaping of the pieces (B) and (E) and of the rockers (H) is got by enlarging the diagram at Fig. 2. The squares are drawn on to the wood with 1 in. sides and then follow each square carefully in the enlarging.

The pieces are cut round with the fretsaw and cleaned and smoothed with fine glasspaper so they can be used for drawing round to get the corresponding pieces to make the two of each wanted.

The foot of the cradle (C) is outlined in Fig. 3, and the measurements can be set out direct from this. Piece D is a plain rectangle ¾ in. thick, and, flush with its edges, the two shaped sides (E) are glued and pinned on. The top (F), Fig. 4 is also square and overlaps slightly the three pieces E, E and D.

The sides (B) and the foot (C) having been fixed together they can be slid between the up-rights (E) and glued to them. A few additional screws or pins put up through the floor will help to strengthen the whole thing.

The construction of the rockers is shown in

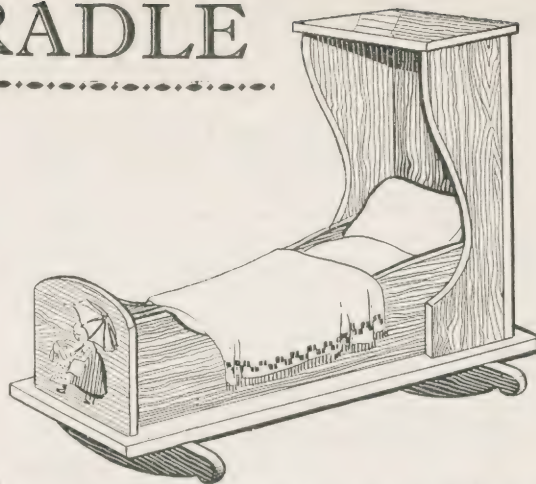


Fig. 5, piece G being cut out at the ends to fit the rockers (H). The three parts should fit stiffly together and afterwards be glued to the floor and one or two screws put down through.

The toy should receive a final glasspapering and then be either painted or stained and varnished.

A little Dutch figure transfer would look well and give a finish to the foot of the cradle. The cutting list of parts will be found extremely useful when setting out the sizes on to the wood.

CUTTING LIST

- A—one piece, 18½ ins. by 7 ins. by ¾ in.
- B—two pieces, 17 ins. by 4½ ins. by ¾ in.
- C—one piece, 6 ins. by 5½ ins. by ¾ in.
- D—one piece, 12 ins. by 6½ ins. by ¾ in.
- E—two pieces, 12 ins. by 3 ins. by ¾ in.
- F—one piece, 7 ins. by 3½ ins. by ¾ in.
- G—one piece, 16 ins. by 1 in. by ¾ in.
- H—two pieces, 10 ins. by 2 ins. by ¾ in.

Fig. 1—Showing general construction of the framework

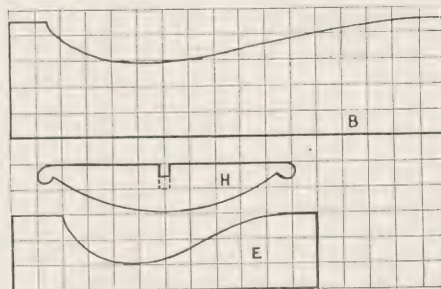
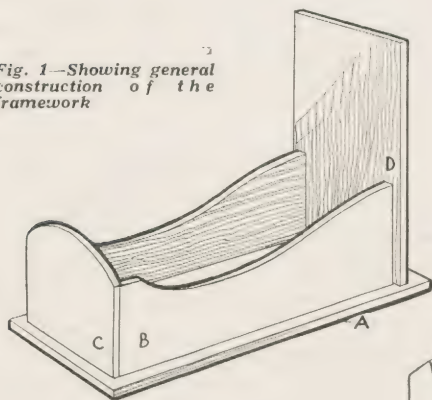


Fig. 2—Outline shape of the various parts

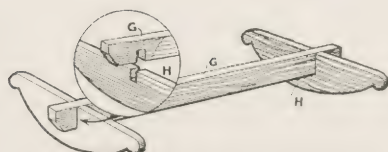


Fig. 5—Details of the rocker portion

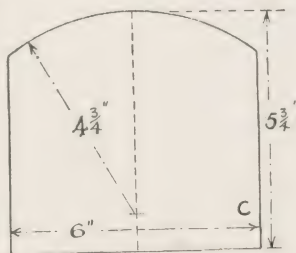


Fig. 3—How to set out the foot of the cradle

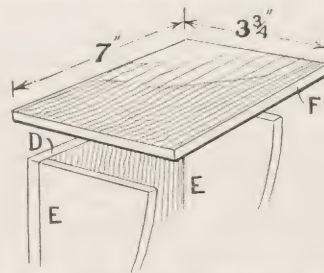


Fig. 4—The canopy measurement and fitting

HOW TO SAIL MODEL YACHTS

THERE is definite skill, added to a slice of luck in the proper handling of a boat so that she gets every ounce out of the wind to carry her on a set course and to be first round the buoy. In every large town no park is considered complete without its yacht pond, whilst every seaside resort worthy of the name boasts its own particular racing pond.

The size and shape of these ponds is immaterial, for some favour a round pond, others a square one, and others a long rectangular one. As the direction of the wind varies almost every day the plan for sailing cannot be definitely laid down for any particular way. It is, indeed, part of the fun to try out varying spots on the pond and so to learn where can be obtained the best sailing wind for that particular type of boat.

Types Vary

For here again the type of boat varies. To the uninitiated any sailing boat is a yacht, and whilst this is true in principle, it is quite open to argument, by those who think they know best. Boats

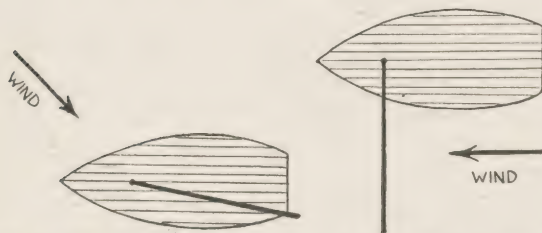


Fig. 1—With the sail close hauled Fig. 2—Sail full out to breeze

vary in type considerably, and even localities have their own preference for a particular style.

This is accounted for by the fact that many of the boats are built by local people, who, in course of time, spread their ideas of boats and building to others constantly using the same water. This localism is found in a wider sense, all over the world.

The boat which is used on British ponds would be laughed at, say, in America, whilst if you go East another type altogether is favoured.

Every local pond has its ruling body of experts, each of whom can give a definite reason for preferring his own type of boat. They usually have used one style of yacht, and have studied the demands of the locality; have probably experimented with their own home-made crafts so that they know what every wind will do in every open and shaded spot of the water they use.

Wind and Sails

For it must be remembered that one cannot plant a boat on the water and expect it to go



merrily down the pond to the exact spot we had intended to pick it out from. All sorts of things upset our calculations. A little puff carries it off its course. An eddy of wind round the clubhouse or a bunch of distant trees will upset our calculations and drive the boat contrariwise.

All depends largely on the "set" of the sails, and the amount of "canvas" the boat carries. Some boats have only a mainsail and a foresail. Others are built to carry topsails and jib as well—all depending on the boat itself and the class to which it belongs.

These sails are held by running lines, and are kept in position by little things called "bowsies." These bowsies are small pieces of wood or composition like the guys of a tent and hold the lines taut in any length required.

Wind Strength

The bowsies are movable along the whole of the running line and allow the sails to belly out to catch a full wind or to be close hauled.

This placing of the sails is ruled by the wind in which they are running. If a light breeze is blowing and the yacht is driving down the pond

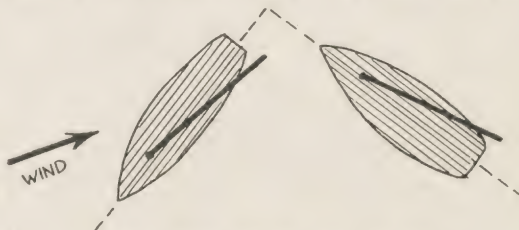


Fig. 3—Wind and direction in tacking

with the wind behind it, the sails can be let full out. If, on the other hand, the boat is "tacking," that is trying to "make" the pond against the wind, the sails have to be drawn in. Then the wind hits the canvas sideways, bounces off it and forces the boat a little forward, but at a tangent to the direction in which it has to go.

The position of running with the wind with the sail full out is illustrated at Fig. 2, whilst at Fig. 1 is shown the position of the boat, with canvas

(Continued on page 426)

MAKING STRING NETS

WHETHER you want a net for catching fish, for keeping the birds from fruit trees, or for tennis or cricket; in fact for any purpose at all, the methods to be followed are almost exactly the same. Of course, you would need to change the thickness of the string to be used for a large, strong tennis net, for naturally, the same material used for a landing net would hardly do for this, and a bigger needle and mesh-stick would also be required.

First of all you must cut a needle from a length of hardwood to the shape shown at the top of the drawing; making it very smooth so that the string will not catch into it; the size depending upon the



The Netting Needle.



Fig. 1—How to begin

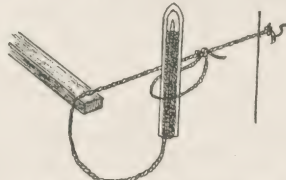


Fig. 2—The first movement

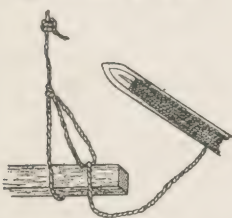


Fig. 3—The loop

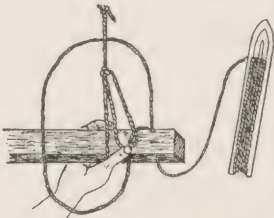


Fig. 4—The next movement

type of net you are going to make. The only other tool you require will be a mesh-stick, this being merely a length of square-section smooth wood, half the size of the mesh it is intended to form. For instance, should the required mesh be 1-inch square, the stick would be but $\frac{1}{2}$ in. across each face.

Suitable string may be bought in balls and should be wound on to the needle until it is full, winding it over and around the projecting tongue and down under the heel, as shown in the small needle pictures.

Fix a stout nail or hook firmly into the wall and tie the string to it as shown at Fig. 1, then form a loop as shown. Lay the mesh-stick under the string, as at Fig. 2, and pass the loaded needle

up through the loop. Take the needle right through and draw the string up tight so that the mesh-stick rests against the loop, as at Fig. 3.

Now comes the making of the knot, the most important part of the whole process, for upon it depends the whole success of the finished net. Hold the mesh-stick in the left hand, with the thumb pressing against the string and with the needle in the right hand. With a quick jerk throw the loop in the string over the mesh-stick and left hand, so that it rests against the wrist as shown at Fig. 4.

The Completed Knot

Push the point of the needle up between the loop first made and the string to the left of it, pulling the needle right through and drawing the knot so formed into shape, Fig. 5. The knot is now pulled up quite tight by drawing the needle and string down in a diagonal direction and giving it a sharp jerk.

Once this knot has been mastered the whole business of net-making becomes a simple matter and speed will increase until the fingers are flying from mesh-stick to needle and back again.

The first mesh having been made in the manner shown, slip out the stick and repeat the operations

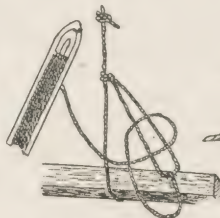


Fig. 5—Drawing the knot

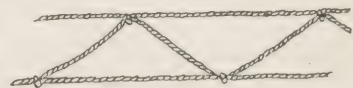


Fig. 6—After a few meshes



Fig. 7—The knotted meshes



Fig. 8—A repairing knot

through the loop last made; continuing to use the last loop formed at each tying until the number of meshes required to make the length of net have all been formed. The number actually required can usually be got at by deciding what length is needed for a particular purpose and then dividing it by the size of the mesh-stick in use. When a number of meshes have been made, the work should look something like that shown at Fig. 6.

Having completed the first line of meshes, unfasten the string from the nail and untie the first loop made, as it will not be of the same size as the subsequent loops. Next pass a length of stout string through the row of meshes, tie the ends of the string together and hang it over the nail.

Proceed with the work as before, using the upper row of mesh as loops with which to form the lower row. Do not slip out the mesh-stick now, as was done previously, but allow the loops to travel back along the stick until some ten or twelve meshes have been formed. In this way the work is much easier to hold and one does not tend to get mixed up, as is the case if the loops are allowed to slip off the stick one by one and drop in a tangle on to the floor.

Knot along the meshes as shown at Fig. 7, by knotting through at the joining of the mesh, as already explained, a perfectly, strong and well-shaped net is formed when concluded; Fig. 7 showing the type of meshing that should be aimed for; each mesh like the next one to it, in size and shape.

Repairing a break

Should the string break, or it be necessary to join in another length to fill the needle, the weaver's knot should be used to make the joint. This is shown at Fig. 8 and is quite simple to form. Form a bight with one end of the string, pass the other end up through the loop so formed, then over, under, and back again through its own loop:

finally drawing the whole thing up tightly together.

Nets may be water-proofed and dyed to any colour; the dyeing being carried out before proofing, by soaking the netting in a solution of packet dye from the chemist, until the desired tint is obtained.

Waterproofing

Water-proofing may be done by dissolving 1 pound of common soap to each gallon of boiling water and plunging the netting into it before the water gets really cool. Remove from the soap bath and immediately plunge into an alum bath, made by dissolving 1 pound of alum in each gallon of water.

Some time must be allowed in the second bath so that the alum solution may soak right into the fibres of the string so that a solution of alumina soap may be deposited right through the material. Too short a soaking will result in surface proofing only, but if properly carried out the netting will be totally impervious to water.

Oil proofing is done by soaking the netting in boiled linseed oil to which a 1 per cent addition of castor oil has been made and allowed to drip and dry in the open air. A much longer process than the soap and alum method. Boiled oil alone will proof the nets, but they will dry hard and stiff; the addition of the castor oil rendering them soft and flexible; a very desirable feature with any type of net.

To Sail Model Yachts—(Continued from page 424)

close hauled. How the wind acts on the sails when the boat is tacking is shown at Fig. 3.

When a boat is tacking it certainly travels a long way to get a little forward, and one's time is usually occupied running from side to side of the pond to turn the boat—or "go about"—when it requires.

When the boat is sailing against a wind blowing a few points "off"—or not quite head on, the

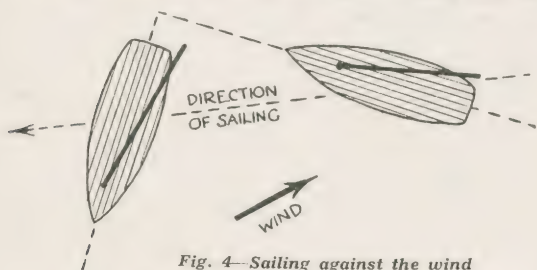


Fig. 4—Sailing against the wind

course is usually one of long and short tacks. This is because in crossing the pond one way the wind is not so much dead ahead, and in consequence a longer drive forward is obtained. This is illustrated at Fig. 4 and the action of the wind is clearly shown, with the position of the mainsail, and the direction of the boat.

Watch the Flag

In order to tell accurately the direction of the

wind a little flag or pennant is flown from the top of the mainmast and this will give a good guide as to how best to set the sails before putting the boat on the water.

Should the sails not set properly the boat is liable to "gybe"—a sudden change which catches the wind the reverse way and causes the boom of the mainsail to swing right over to the opposite side and alter the whole course of the boat.

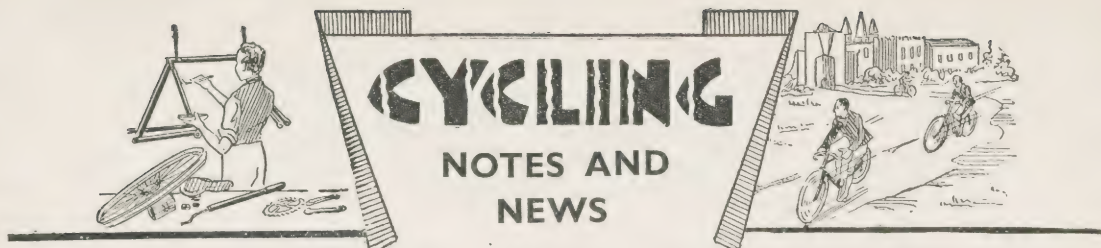
Gybing is particularly annoying, and sometimes disastrous in real yachting, whilst in model yacht racing it loses a lot of time and may be, the race itself.

Skilful Enjoyment

There is, then, much to learn in this sport and the owner of a good boat can get endless hours of fun. The wind, the position of starting, the set of the sails, the amount of canvas can all vary so much that one is never certain of anything and it is this pitting one's skill against odds that makes the game so fascinating.

Moreover, by learning the art of sailing a yacht on a model pond we make ourselves proficient for handling a full size boat on rivers or Broad.

The great thing, therefore, is to get the best boat one can afford. It is a mistaken policy to buy a boat that just looks nice, but which on the water may be badly balanced, and will not act to her rudder or her sails.



Motorised Bicycles

THE motor-assisted pedal cycle should be popularised widely this summer, if the plans of several British firms come to fruition. "Velometers," as these machines are called abroad, have achieved enormous popularity on the Continent, mainly for utilitarian purposes.

The British edition is driven, in most cases, by a Villiers engine of 1 h.p., and, thanks to improvements in engine design during the last year or two, this amount of horse-power is sufficient for most cycling purposes. The machines are not motor-cycles in the ordinary sense, but are built on the lines of an ordinary bicycle. The ordinary pedalling gear is retained, for use when the low-powered engine is insufficient, but in practice it is found that nearly all main road hills can be climbed by the engine-power alone. Prices range from £16 16s.

The engines are of the simplest, two-stroke type, and will cover 120 miles or more on one gallon of fuel. The greatest handicap to the use of these machines in Great Britain is that, contrary to conditions in France and elsewhere, riders must undergo a driving test. As the maximum speed of a velometer is only about 25 m.p.h., however, efforts are afoot to have this regulation removed in the case of these machines, in Great Britain.

Tar Nuisance

IT has long been wondered by cyclists why the best season of the year is invariably the one for tar-spraying work on the roads. The wise rider who encounters these operations will go gingerly, both for safety's sake and to preserve the appearance of his machine, and he may even find it advisable to dismount and walk the short distance, if his machine is a new one and has a light-coloured frame. If you do have the misfortune to have your bicycle marred by tar splashes, remember that eucalyptus oil will remove the marks. It should be applied to the tar with a soft cloth. The marks will vanish after a little gentle rubbing, if first treated in this way.

Easy Riding

NOW that the high summer is here, cycle road "races" and time-trials covering the whole 24 hours are in progress. It may astonish many ordinary riders to learn that competitors in these events cover up to 400 miles and more in a single day. The touring cyclist can learn much from the methods adopted by these long-distance riders.

For instance, when such mammoth distances are being attempted, the expert rigorously avoids "fighting" a head wind. If an adverse wind is

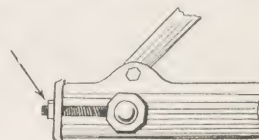
encountered, he uses a comparatively low gear and tackles the job gently. Any time that is lost can be retrieved on the return journey, when the wind is in the rear.

So far as the tourist is concerned, not only can this plan be beneficially adopted, but he can choose his route to some extra advantage. In a head-wind, it is wise to avoid the open main roads. Alternative routes, running parallel to the main roads and sheltered by hedges, can usually be found.

The expert long-distance cyclist also adopts a helpful method of pedalling. He "twirls" the pedals, using his ankles to good effect, rather than giving heavy thrusts.

Concerning Chains

THE driving chain of your bicycle is one of the most important parts of your machine, and as such it needs periodical attention. Especially when first used, a chain is liable to stretch, and when this occurs it is advisable to adjust the tension. The chain is tightened by first loosening slightly the nuts or thumb-screws holding the back wheel (there is no need to slacken them more than about two complete turns, much less to remove them entirely) and then the smaller nuts of the chain adjuster screws can be tightened. The sketch shows where these are situated.



After adjustment, there should be sufficient play for the chain to be slightly raised from the teeth of the sprockets; but it should not be so loose that it can be lifted off.

The cyclist who wishes to know whether the chain of his machine requires replacing with a new one can test it in an easy way. Remove the chain, lay it on a table, and see whether it can be stretched appreciably when the ends are pulled in opposite directions. If it can, replacement will be wise.

Fitting Accessories

CYCLING enjoyment can be enhanced, and greater safety sometimes encouraged, by the fitting of accessories. A handlebar mirror and a rear carrier, for instance, come in this category. But they must be chosen carefully, and fitted correctly.

In buying a handlebar mirror, pay a good price, if you desire full satisfaction. This may seem trite advice, but many riders fail to appreciate the various points of a good mirror.

A GLASS PLATE HARMONICUM

GLASS, as most people are aware, emits a musical sound when struck and in this respect is very successful when used in a musical instrument of the dulcimer or harmonicum type. The instructions given are for building an instrument of eighteen notes, but this may, of course, be considerably increased quite successfully, even up to a range of several octaves.

The first thing to take in hand is the making of the case or sound-board and for this satin walnut may be used throughout. In addition to being easily worked, it is an ideal wood for the making of musical instruments.

The Base

For the bottom of the case you require a length of 24ins. cut to the outer shape shown at Fig. 1. The wide end is $6\frac{1}{2}$ ins. in width, while the narrow end is $4\frac{1}{2}$ ins., from wood $\frac{3}{16}$ in. thick. Make the edges square and true and glasspaper both sides as smooth as is possible.

The sides are cut from wood a $\frac{1}{4}$ in. thick, of the exact length of the sides and should be $1\frac{1}{8}$ ins. wide, while the ends are from $\frac{3}{8}$ in. material, cut to fit snugly between the sides and slotted as shown at Fig. 2. The slots in the wide end are cut a $\frac{1}{4}$ in. in width and $\frac{1}{2}$ in. deep, spacing these at $2\frac{1}{2}$ ins. from the sides, while those in the narrow end are $1\frac{1}{4}$ ins. from the sides. A round-headed brass screw is secured below the centre of each slot, see Fig. 2.

Assembly

Make all the wood as smooth as possible and assemble the case together, using glue for the purpose, as brads or screws render the wood less resonant and not nearly so satisfactory as if glue is used entirely for the joints.

In the centre of the case glue the bridge; this being a strip of satin walnut about $\frac{1}{2}$ in. thick, wide enough to slip neatly between the sides and must clear the bottom by $\frac{1}{2}$ in., while its upper surface is level with the end slot bottoms. Allow the glue to set firmly, when the case may be stained and polished, or finished in any other way desired.

The Stringing

Take a length of very strong, fine twine, or better still, silk, and secure one end of this to one screw in the wide end. Take the length through one slot, down over the bridge, through the opposite slot in the narrow end and under the screw. Now take it back again in a similar manner to the wide end and secure it firmly to the remaining screw there.

It is most essential the twine should be really tight throughout its length and this may be further

improved by putting more tension on to it by turning the screws around after it is attached.

Glass $\frac{1}{16}$ in. thick is used for the notes and this should be cut into strips $\frac{1}{16}$ in. wide; an ordinary wheel cutter will do the work quite well. As the instrument described ranges from B at the lower end to E at the upper, in the scale of C, the strips must be cut to the following lengths. B $5\frac{3}{8}$; C $5\frac{1}{4}$; D 5; E $4\frac{7}{8}$; F $4\frac{3}{8}$; G $4\frac{1}{2}$; A $4\frac{3}{8}$; B $4\frac{1}{4}$; C $4\frac{1}{8}$; D $3\frac{3}{4}$; E $3\frac{5}{8}$; F $3\frac{1}{2}$; G $3\frac{3}{8}$; A $3\frac{1}{4}$; B $3\frac{1}{8}$; C $3\frac{1}{4}$; D $3\frac{1}{8}$; E $2\frac{3}{4}$. Cut these as accurately as possible, $\frac{1}{16}$ in. wide.

Lay the glasses on the strings, commencing with lower B glass, and move them along the strings until when struck they emit the desired tone.

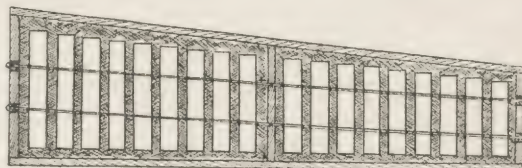


Fig. 1—Interior of the Instrument



Fig. 2—The end pieces



Fig. 3—The cork hammer



Fig. 4—The finished Instrument

You can tune lower B from a piano or other fixed tone instrument, and tune the others up from it. Fix each glass as it is correctly tuned to the strings with a small blob of sealing wax at either side.

Tuning the Instrument

Tuning is more simple than it may appear, for the strings are not parallel and as the strips are slid along them, so is the tone of each slightly altered.

Having completed the tuning, secure the strings to the centre bridge with a touch of wax and then fit the covering strips of wood as shown at Fig. 4, which shows the completed instrument.

(Continued at foot of next page)

HOW TO DO "STICK" PRINTING

DECORATIVE patterns of attractive colours and pleasing shapes can be printed on almost any material by this simple process of stick printing. It consists broadly of cutting a piece of wood to the desired pattern, charging it with colour and printing the design.

As simple as it is, a word about design, cutting the stick and mixing the colour is necessary if the best results are expected.

Designs

Illustrated on this page are a few types of design suitable to be printed by this process. All designs and shapes do not avail themselves because you must remember for each different shape a stick has to be cut and for this reason keep the design as simple as possible with only a few convenient shapes.

A 'repeat,' 'all over,' 'border' and 'unit' design are a few of the patterns that can be executed. Try when you are designing to begin with a unit. Set out to make a pattern composed solely of dots or dots and straight lines.

This is probably the best for a beginner, because you stand no chance of making a design that is impossible to print. When you have achieved this satisfactorily, draw it out accurately with a pencil and ruler on the material and cut the stick.

Cutting the Stick

This need not necessarily be of wood, but if it is used, choose a hard variety, such as mahogany, walnut, or oak. Draw out the pattern, on end grain and cut or file the wood to shape.

You will realise now why it is necessary to keep it simple. For a dot the end of a meat skewer is admirable; for a ring use a cotton reel; for a hexagon a pencil end.

These are only a few of the shapes that are provided for us. If the pattern requires more than one stick, make an impression with the first one and then in turn with the others until they fit perfectly. The colours should not overlap, nor should they extend beyond the lines.

Colour

The stick is charged with colour by pressing it hard on to a printing pad. If you have not one, this can be made easily by placing a piece of

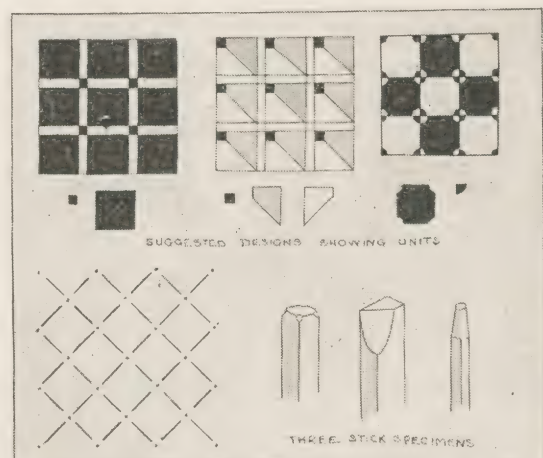
flannel in a tin and soaking it with water colour. Do not have this too thin and have a separate tin for each colour.

Printing

If you are printing on paper (as is best for beginners) place some soft material under it to allow a little "give" when the impression is made. Charge the stick with colour and place it carefully over the respective shape and then press it hard with thumb and first finger.

On no condition should you feel for the right place, neither should you shift it when the stick is on the paper. Lift it off cleanly and a precise impression should result.

Repeat this for the same unit all over the paper and then again for the next stick. Choose colours that blend well together, remembering to keep the bright attractive colours for the smaller spaces. Fancy boxes, book covers, show china



and curtains are only a few of the articles that can be decorated in this manner.

Cork, rubber and even potatoes make admirable sticks as an alternative to wood and you will find that when printing on hard and non-absorbing surfaces such as glass and china a rubber stick is necessary. For all articles that require washing use oil colours.

Plate Glass Harmonicum—(Continued from page 428)

The covering strips are made from $\frac{1}{4}$ in. satin walnut, 2 ins. wide at one end and tapering to $1\frac{1}{2}$ ins. at the other. These are best secured in position by means of tiny screws, sinking the heads in flush with the surface and taking great care not to split the sides of the case when driving them home.

Screws are used in this case, for should damage occur to any of the glass slips, it is much easier

to remove the protecting strips than if these were glued in place.

For the hammers with which to play the harmonicum, glue round wedge-shaped pieces of cork or soft wood to a length of split cane, whale-bone or other similar flexible material. Make two hammers, for you will soon learn to play the instrument with both hands, thus adding considerably to its musical effect Fig. 3.

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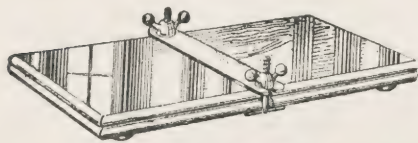
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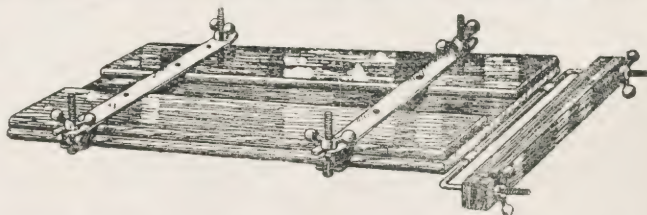
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OUR MONTHLY CALENDAR PICTURE PANEL

THE end of this week sees the last day of July, so we must have our usual monthly calendar picture ready to put on for August 1st.

You remember we have provided suitable panels each month of full size details which feature some activity which is essentially to do with the month in question. For August obviously we have the holiday spirit, and have incorporated a seaside scene with bathers and the inevitable beach ball. The panel printed at the foot of this page is suitable for taking the place of the July one as previously fitted, and the picture herewith shows the whole calendar complete.

Cut out the little panel in thin wood or some composition, then screw it on to a backboard containing one of the Hobbies Pads No. 6154.

As previously suggested, these panels are very suitable for other purposes besides this particular calendar. They can be used as birthday cards for anyone in August, or for putting round a room as a suitable strip panel to indicate the seasons and months of the year.

By the time December comes, you will have a representative set of pictures of the various months.

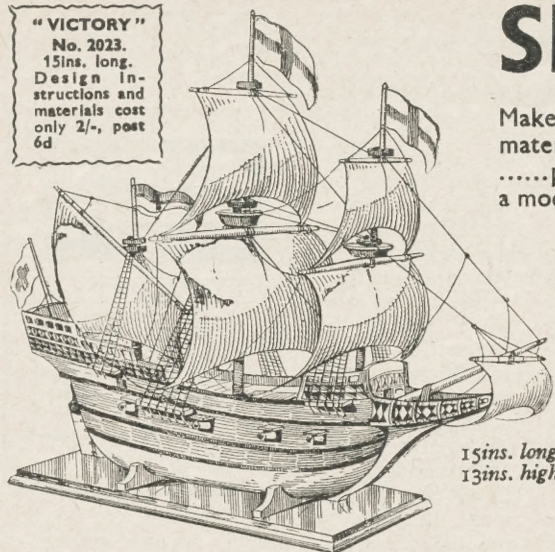
So far as the word August is concerned, this is merely cut out in the paper, pasted to the panel below the picture itself and there left. It is not cut out in wood, but merely painted, if you so desire, in any colour of ordinary water paint or enamel.

The actual fretted panel can, of course, be left with the wood in its natural state or coloured. Stain will darken it to any shade or it would look well, treated jet black with Ebony Colour Polish or dull Eggshell black. It would then stand out very strongly against the background.



AUGUST

"VICTORY"
No. 2023.
15ins. long.
Design In-
structions and
materials cost
only 2/-, post
6d



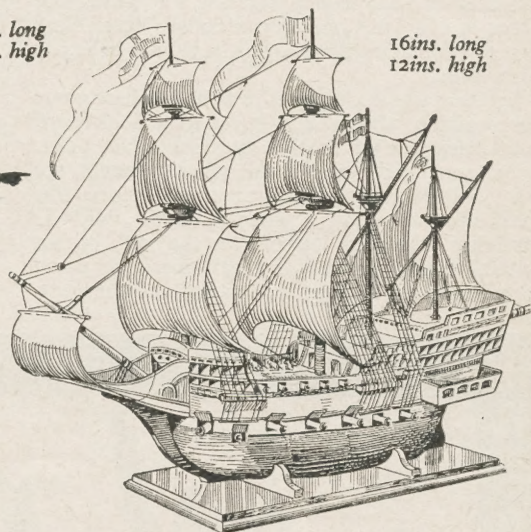
15ins. long
13ins. high

Ship Models

Make a ship model from Hobbies design and materials. It will cost you only a shilling or soplus a little patience.....but you will have a model to be proud of for the rest of your life.

No. 2147 "MAYFLOWER"

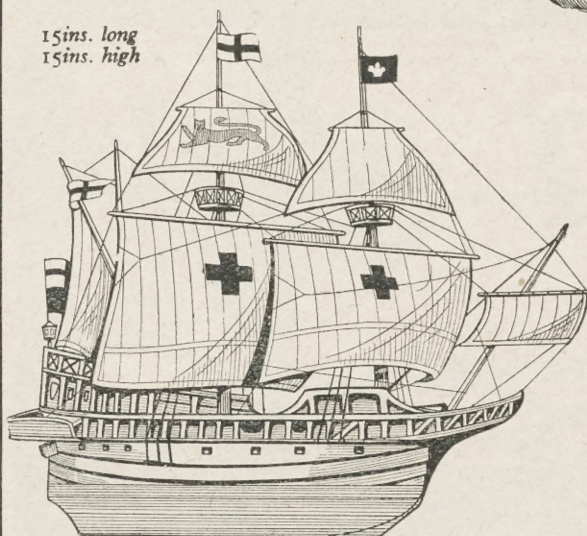
The complete parcel of design, instructions, wood, round rod for masts, waxed paper for sails, wire, special cord, 12 pulleys, eight wood guns, etc. costs 4/- ; postage 6d.



16ins. long
12ins. high

No. 2095 "ELIZABETH JONAS"

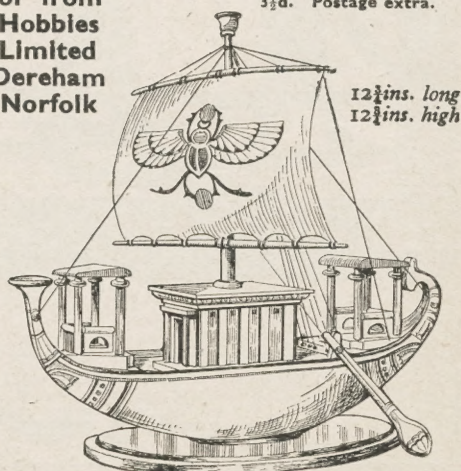
This model must be popular. We have sold thousands of designs and parcels of materials. The design, instructions, wood, turnings, round rod, six pulleys, ten wood guns, waxed paper for sails, etc. cost only 3/6 ; postage 6d.



15ins. long
15ins. high

Of all
Branches
and Agents
or from
Hobbies
Limited
Dereham
Norfolk

Tins of Enamel, 2½d.
each. Gold Enamel
3½d. Postage extra.



12½ins. long
12½ins. high

"GOLDEN HIND"

The design and Instructions cost 10d. The parcel of planed wood, round rod, etc., costs only 2/-; postage 6d. Send 3/4 and start building it NOW !

No. 2144 EGYPTIAN GALLEY

Isn't this a delightful model ? Design, instructions, wood, round rod, turning, special cord, 12 brass eyes and waxed paper for sail 3/- ; postage 6d.

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All Editorial matter should be sent to The Editor, Hobbies Weekly, Dereham, Norfolk. If enclosed with orders or other matter for Hobbies Ltd., it should be written on a separate sheet of paper. Any matter requiring an answer must have a stamped addressed envelope enclosed.

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CONTRIBUTIONS.

The Editor is always pleased to consider suitable articles for these pages, which, if accepted, will be paid for at the usual rates. While every effort will be made to return unsuitable contributions (if stamps for that purpose are sent with them), the Editor does not accept any responsibility for their loss.

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Hobbies will be forwarded by post to any part of the world at the following prepaid rates. Twelve months 13/-, six months 6/6, three months, 3/3. Registered for transmission by Canadian Magazine Post

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For the sake of those readers living abroad who order their goods from England, we give below the postal charges on parcels from some of the principal countries. If the weight of the goods are known, the amount shown in the proper column should be added to the remittance when the goods are ordered. A special leaflet giving particulars of postages in other countries is obtainable on request to the Export Dept., Hobbies Ltd. Dereham, Norfolk, England.

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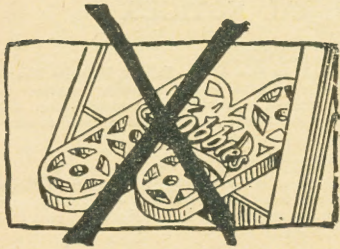
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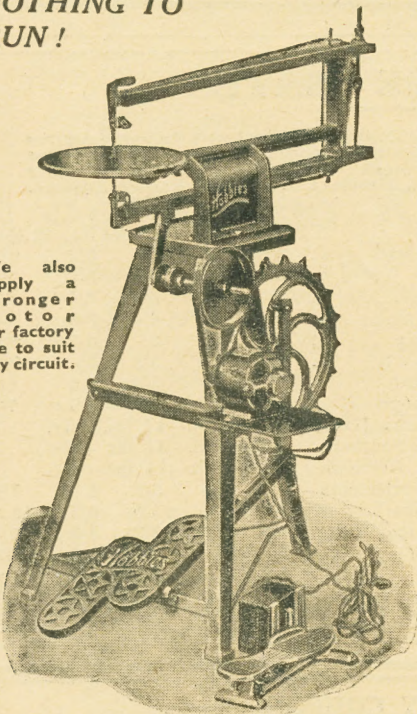


NEW Device Abolishes Treadling!

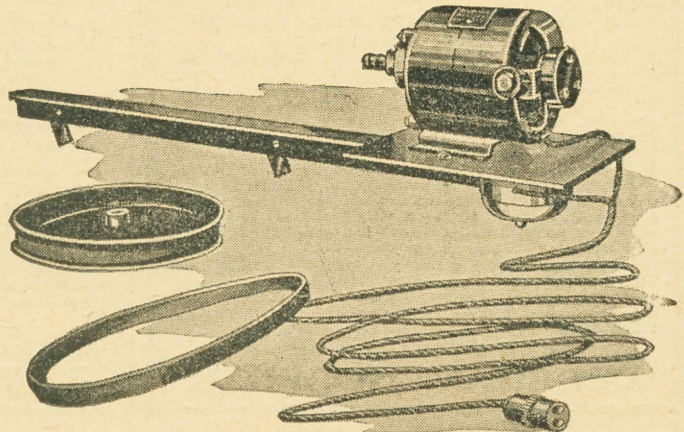
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